I claim:

1. A method of adding damping to an electrostatic positioner by electronic means comprising the steps of:
   (a) applying a control voltage driving said electrostatic positioner to control a physical position of said electroctatic positioner, and
   (b) producing a first voltage proportional to the total current passing through said electrostatic positioner in response to said control voltage, and
   (c) producing a second voltage proportional to the current passing through the static capacitance of said electrostatic positioner, and
   (d) subtracting said second voltage from said first voltage to produce a third voltage proportional to the current produced by the velocity of the moving plate of said electrostatic positioner, and
   (e) amplifying or attenuating said third voltage to obtain the desired degree of damping, and
   (f) applying said amplified or attenuated third voltage to increase said control voltage when said movable plate is moving away from the stationary plate, whereby a negative feedback effect is produced that inhibits the velocity of said movable plate thereby producing the effect of damping added to said electrostatic positioner by electronic means.
2. The method for adding damping to an electrostatic positioner by electronic means of claim 1 wherein the proportionality of said

(d) applying said amplified or attenuated first voltage to increase said control voltage when the movable plate is is moving away from the stationary plate, whereby a negative feedback effect is produced that inhibits the velocity of said movable plate thereby producing the effect of damping added to the electrostatic positioner by electronic means.

6. A circuit for producing an electrostatic velocity signal comprising:

(a) means for measuring the total current through said electrostatic positioner and producing a first signal proportional to said total current, and

(b) means for modeling the current through the static capacitance of said electrostatic positioner and producing a second signal proportional to said current through said static capacitance of said electrostatic positioner wherein the proportionality of said first signal to current and the proportionality of said second signal to current are substantially identical, and

(c) means for subtracting said second signal from said first signal to produce a difference signal proportional to the current generated by the velocity of said electrostatic positioner movable plate and therefore proportional to said moving plate velocity.

7. The circuit for producing the electrostatic positioner velocity signal of claim 6 wherein the means for measuring said total

first voltage to current and the proportionality of said second voltage to current are substantially identical.

3. The method for adding damping to an electrostatic positioner by electronic means of claim 1 wherein said first voltage is produced by a first resistor in series with said electrostatic positioner, wherein this combination in series is connected to said control voltage.

4. The method for adding damping to an electrostatic positioner by electronic means of claim 1 wherein said second voltage is produced by a second resistor in series with a second capacitance wherein said second resistor and said second capacitance have an RC time constant substantially equal to the RC time constant of said first resistor in series with said electrostatic positioner static capacitance and wherein said second resistor and said second capacitance in series are connected to said control voltage.

5. A method for adding damping to an electrostatic positioner by electronic means, comprising the steps of:
   (a) applying a control voltage to said electrostatic positioner to control a physical position of said electrostatic positioner, and
   (b) producing a first voltage proportional to the total current passing through said electrostatic positioner in response to said control voltage, and
   (c) amplifying or attenuating said first voltage to obtain the desired degree of damping, and

current through said electrostatic positioner is the voltage developed across a resistor in series with said electrostatic positioner.

8. The circuit for producing the electrostatic positioner velocity signal of claim 6 wherein the means for modeling said current through said static capacitance of said electrostatic positioner comprises a first combination of a first resistor and a first capacitor connected in series and driven by the same voltage driving a second combination comprising said electrostatic positioner static capacitance connected in series with a second resistor wherein said first combination has an RC time constant of a predetermined value substantially identical to the RC time constant of said second combination, whereby the voltage signals developed across said first resistor and said second resistor are substantially identical for all significant operating frequencies of said driving voltage.

9. An apparatus for control of an electrostatic positioner comprising:

   (a) control means for generating a control signal to drive an electrostatic positioner to a commanded position wherein said control means includes means for modifying said control signal in response to an electrostatic positioner velocity signal, and

   (b) computing means for synthesizing said electrostatic positioner velocity signal comprising subtracting means to subtract from a first signal for the total current passing through

through said electrostatic positioner static capacitance thereby producing a third signal which is said electrostatic positioner velocity signal, and

(c) synthesizing means for producing said second signal comprising measuring means to measure the current through a model impedance driven by said control voltage signal wherein said model impedance has attenuation and phase characteristics substantially identical to those for said electrostatic positioner static capacitance and any impedance in series therewith, and

(d) amplifying or attenuating means to modify said third signal to obtain the desired degree of damping of said electrostatic positioner, and

(e) applying said amplified or attenuated third signal to increase said control signal voltage when said movable plate is moving away from the stationary plate, whereby a negative feedback effect is produced that inhibits the velocity of said movable plate thereby producing the effect of damping added to said electrostatic positioner.

10. The apparatus for control of an electrostatic positioner of claim 9 wherein said model impedance comprises a first capacitor and a first resistor in series and wherein said second signal ia derived from the voltage developed across said first resistor and wherein said impedance in series with said electrostatic positioner is a resistor.

11. The apparatus for control of an electrostatic positioner of

claim 9 wherein said first signal is derived from the voltage developed across a resistor in series with said electrostatic positioner.

12. The apparatus for control of an electrostatic positioner of claim 9 wherein said first signal is derived from a Hall effect device sensing total current through said electrostatic positioner.